



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

March 13, 2014

WELL WORK PERMIT

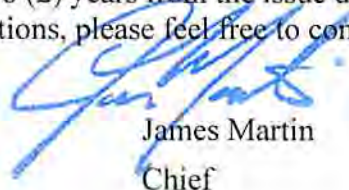
Horizontal 6A Well

This permit, API Well Number: 47-1706447, issued to EQT PRODUCTION COMPANY, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: WV 514394
Farm Name: SECRIST, MARY FARR
API Well Number: 47-1706447
Permit Type: Horizontal 6A Well
Date Issued: 03/13/2014

Promoting a healthy environment.

03/14/2014

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

CASING AND TUBING PROGRAM

017 06447

18)

| TYPE | Size | New or Used | Grade | Weight per ft. | FOOTAGE: for Drilling | INTERVALS: Left in Well | CEMENT: Fill-up (Cu.Ft.) |
|--------------|--------|-------------|--------|----------------|-----------------------|-------------------------|--|
| Conductor | 20 | New | Varies | Varies | 40 | 40 | 38 CTS |
| Fresh Water | 13 3/8 | New | MC-50 | 81 | 903 | 903 | 787 CTS |
| Coal | | | | | | | |
| Intermediate | 9 5/8 | New | MC-50 | 40 | 5,238 | 5,238 | 2072 CTS |
| Production | 5 1/2 | New | P-110 | 20 | 18,534 | 18,534 | See Note 1 |
| Tubing | 2 3/8 | | J-55 | 4.6 | | | May not be run, if run will be set 100' less than TD |
| Liners | | | | | | | |

| TYPE | Size | Wellbore Diameter | Wall Thickness | Burst Pressure | Cement Type | Cement Yield (cu. ft./k) |
|--------------|--------|-------------------|----------------|----------------|--------------|--------------------------|
| Conductor | 20 | 24 | 0.375 | - | Construction | 1.18 |
| Fresh Water | 13 3/8 | 17 1/2 | 0.38 | 2,480 | 1 | 1.21 |
| Coal | | | | | | |
| Intermediate | 9 5/8 | 12 3/8 | 0.395 | 3,590 | 1 | 1.21 |
| Production | 5 1/2 | 8 1/2 | 0.361 | 12,640 | - | 1.27/1.86 |
| Tubing | | | | | | |
| Liners | | | | | | |

Packers

| | | | | |
|-------------|-----|--|--|--|
| Kind: | N/A | | | |
| Sizes: | N/A | | | |
| Depths Set: | N/A | | | |

Note 1: EQT plans to bring the TOC on the production casing cement job 1,000' above kick off point, which is at least 500' above the shallowest production zone, to avoid communication.

*DCN
1-31-2014*

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and complete a new horizontal well in the Marcellus formation. The vertical drill to go down to an approximate depth of 5,508'.
 Then kick off the horizontal leg using a slick water frac.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from freshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) of chemicals (including 15% Hydrochloric acid, gelling agent, gel breaker, friction reducer, biocide, and scale inhibitor), referred to in the industry as a "slickwater" completion. Maximum anticipated treating pressures are expected to average approximately 8500 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 200,000 barrels of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000 pounds of sand per stage.

21) Total area to be disturbed, including roads, stockpile area, pits, etc. (acres): 37.4

22) Area to be disturbed for well pad only, less access road (acres): 16.3

23) Describe centralizer placement for each casing string.
 • Surface: Bow spring centralizers – One at the shoe and one spaced every 500'.
 • Intermediate: Bow spring centralizers – One cent at the shoe and one spaced every 500'.
 • Production: One spaced every 1000' from KOP to Int csg shoe

24) Describe all cement additives associated with each cement type. Surface (Type 1 Cement): 0-3% Calcium Chloride
 Used to speed the setting of cement slurries.

0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of the cement slurry to a thief zone.
Intermediate (Type 1 Cement): 0-3% Calcium Chloride. Salt is used in shallow, low temperature formations to speed the setting of cement slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of whole drilling fluid or cement slurry (not filtrate) to a thief zone.

Production:

Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening time.

0.3% CFR (dispersant). Makes cement easier to mix.

Tail (Type H Cement): 0.25-0.40% Lignosulfonate (Retarder). Lengthens thickening time.

0.2-0.3% CFR (dispersant). This is to make the cement easier to mix.

60 % Calcuim Carbonate. Acid solubility.

0.4-0.6% Halad (fluid loss). Reduces amount of water lost to formation.

25) Proposed borehole conditioning procedures. Surface: Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full joint until cuttings diminish at surface. When cuttings returning to surface diminish, continue to circulate an additional 5 minutes. To ensure that there is no fill, short trip two stands with no circulation. If there is fill, bring compressors back on and circulate hole clean. A constant rate of higher than expected cuttings volume likely indicates washouts that will not clean up.

Intermediate: Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full joint until cuttings diminish at surface. When cuttings returning to surface diminish, continue to circulate an additional 5 minutes. If foam drilling, to enhance hole cleaning use a soap sweep or increase injection rate & foam concentration.

Production: Pump marker sweep with nut plug to determine actual hole washout. Calculate a gauge holes bottoms up volume. Perform a cleanup cycle by pumping 3-5 bottoms up or until the shakers are clean. Check volume of cuttings coming across the shakers every 15 minutes.

*Note: Attach additional sheets as needed.

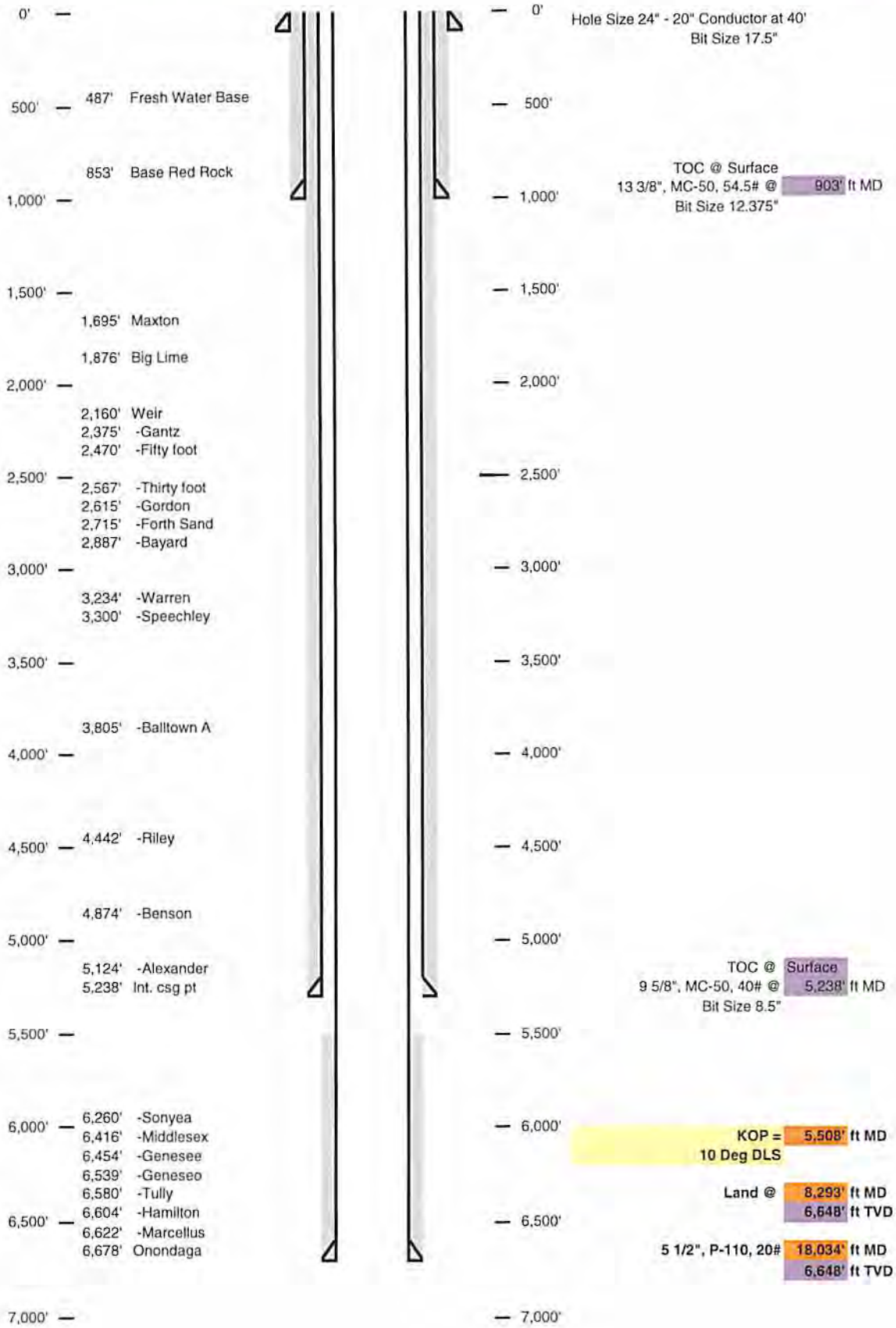
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 Office of Oil and Gas
 Department of Environmental Protection

Well Schematic
EQT Production

017 06447

Well Name 514394 (WEU49H5)
County Doddridge
State West Virginia

Elevation KB: 1143
Target Marcellus
Prospect
Azimuth 155
Vertical Section 10617



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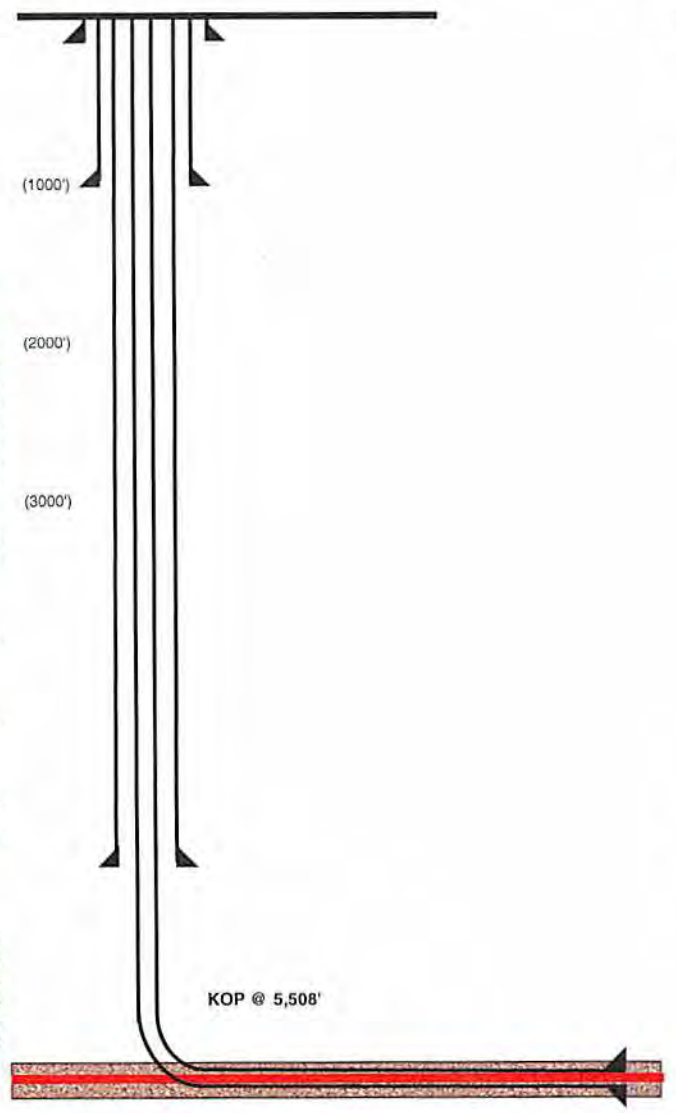
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WV Dept. of Environmental Protection

017 06447

Well 514394 (WEU49H5)
 EQT Production
 West Union
 Doddridge West Virginia

Azimuth 155
 Vertical Section 10617

| TVD Depth (feet) | Formation Tops (TVD) |
|------------------|------------------------------|
| 0' | |
| 250' | |
| 500' | Base Fresh Water 487 |
| 750' | |
| 1,000' | Base Red Rock 853 |
| 1,250' | |
| 1,500' | |
| 1,750' | Maxton 1695 - 1764 |
| 2,000' | Big Lime 1876 - 1926 |
| 2,250' | Wair 2160 - 2276 |
| 2,500' | Gantz 2375 - 2435 |
| 2,750' | Fifty foot 2470 - 2519 |
| 3,000' | Thirty foot 2567 - 2615 |
| 3,250' | Gordon 2615 - 2715 |
| 3,500' | Forth Sand 2715 - 2808 |
| 3,750' | Bayard 2887 - 2951 |
| 4,000' | |
| 4,250' | |
| 4,500' | |
| 4,750' | |
| 5,000' | Warren 3231 - 3254 |
| 5,250' | Speechley 3300 - 3528 |
| 5,500' | |
| 5,750' | |
| 6,000' | Balltown A 3808 - 4144 |
| 6,250' | |
| 6,500' | Riley 4442 - 4470 |
| 6,750' | |
| 7,000' | |
| 7,250' | |
| 7,500' | Benson 4874 - 4892 |
| 7,750' | |
| 8,000' | Alexander 5124 - 5198 |
| 8,250' | Int. csg pt 5238 |
| 8,500' | |
| 8,750' | |
| 9,000' | Sonyea 6260 - 6414 |
| 9,250' | Middlesex 6416 - 6151 |
| 9,500' | Genesee 6454 - 6539 |
| 9,750' | Genesee 6539 - 6580 |
| 10,000' | Tully 6580 - 6604 |
| 10,250' | Hamilton 6604 - 6622 |
| 10,500' | Marcellus top 6622 |
| 10,750' | Target Inside Marcellus 6648 |
| 11,000' | Marcellus Bottom 6678 |



| Hole Size (inches) | Casing Type | Casing Size (inches) | WT (ppf)/Grade |
|--------------------|-------------------|----------------------|----------------|
| 24 | Conductor | 20 | |
| 17 1/2 | Surface | 13 3/8 | 54#/MC-50 |
| 12 3/8 | Intermediate | 9 5/8 | 40#/MC-50 |
| 8 1/2 | Production Casing | 5 1/2 | 20#/P-110 |

Land curve @ 8,648' ft TVD / 8,293' ft MD Est. TD @ 8,648' ft TVD / 18,034' ft MD
 9,740' ft Lateral

Proposed Well Work:
 Drill and complete a new horizontal well in the Marcellus formation.
 The vertical drill to go down to an approximate depth of 5508'.
 Then kick off the horizontal leg into the Marcellus using a slick water frac.

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 WV Dept. of Environmental Protection

Well Number: 514394 (WEU49H5)

| Casing and Cementing | | Deepest Fresh Water: 487' | | | |
|---------------------------------|--------------|---------------------------|--------------------------------|--------------------------------|---|
| Type | Conductor | Mine Protection | Surface | Intermediate | Production |
| Hole Size, In. | 24 | | 17 1/2 | 12 3/8 | 8 1/2 |
| Casing Size, OD In. | 20 | - | 13 3/8 | 9 5/8 | 5 1/2 |
| Casing Wall Thickness, In. | 0.375 | - | 0.380 | 0.395 | 0.361 |
| Depth, MD | 40' | - | 903' | 5,238' | 18,534' |
| Depth, TVD | 40' | - | 903' | 5,238' | 6,648' |
| Centralizers Used | Yes | - | Yes | Yes | Yes |
| Weight/Grade | 81#/MC-50 | - | 54#/MC-50 | 40#/MC-50 | 20#/P-110 |
| New or Used | New | - | New | New | New |
| Pressure Testing | - | - | 20% Greater than exp. Pressure | 20% Greater than exp. Pressure | 20% greater than exp. fracture pressure |
| After Fracture Pressure Testing | - | - | - | - | 20% greater than exp. shut pressure |
| ID, in | 19.25 | - | 12.615 | 8.835 | 4.778 |
| Burst (psi) | - | - | 2,480 | 3,590 | 12,640 |
| Collapse (psi) | - | - | 1,110 | 2,470 | 11,100 |
| Tension (mlbs) | - | - | 455 | 456 | 587 |
| Cement Class | - | - | - | - | H |
| Cement Type | Construction | - | 1 | 1 | - |
| Cement Yield | 1.18 | - | 1.21 | 1.21 | 1.27/1.86 |
| Meets API Standards | - | - | Yes | Yes | Yes |
| WOC Time | - | - | Min. 8 hrs | Min. 8 hrs | Min. 8 hrs |
| Top of Cement (Planned) | Surface | - | Surface | Surface | 5,438' |
| Fill (ft.) | 40' | - | 903' | 5,238' | 12,596' |
| Percent Excess | - | - | 20 | 20 | 10 |
| Est. Volume (cu ft) | 38 | - | 787 | 2,061 | 3,176 |
| Est. Volume (BBLs) | 7 | - | 140 | 367 | 566 |

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Office of Oil and Gas
WV Dept. of Environmental Protection

WEST VIRGINIA GEOLOGICAL PROGNOSIS

Horizontal Well
514394 (WEU49H5)

017 06447

Drilling Objectives: Marcellus
County: Doddridge
Quad: West Union
Elevation: 1143 KB 1130 GL
Surface location Northing: 277554.7 Easting: 1635663.7
Landing Point Northing: 276081 Easting: 1634116.3 TVD: 6648
Toe location Northing: 267253.6 Easting: 1638232.6 TVD: 6648
Recommended Azimuth 155 Degrees Recommended LP to TD: 9740

Proposed Logging Suite: @ **Intermediate Casing Point:** The open hole logs need to consist of Gamma Ray, Neutron, Density, Induction and Dipole Sonic. **CONTACT LUKE SCHANKEN PRIOR TO LOGGING (412.580.8016)**
 @ **Pilothole TD - Run OII logs** for evaluation of uphole zones.
 An e-log should be run for the first well on every horizontal well pad.
 GR/LDT/DIL/CNL/Temp/Audio (Allegheny's Air Suite) - pull GR to surface.
 Mudloggers to be on location at kickoff point to run samples and measure gas thru both the curve and lateral sections.

Recommended Gas Tests: 1800, 2050, 2600, Intm Csg. Pt., 3400, 4900, 5250, KOP. (Gas test at any mine void)
 Gas test during any trip or significant downtime while drilling the lateral section.

Possible red rock at: 115,188,277,408,588,683,753,835,853,.....

ESTIMATED FORMATION TOPS

| Formation | Top (TVD) | Base (TVD) | Lithology | Comments |
|------------------|-----------|------------------------|-----------|---|
| Fresh Water Zone | 1 | 487 | | FW @ 243,292,352,487,..... |
| Coal | 340 | 343 Coal | | |
| Pittsburgh Coal | 483 | 485 Coal | | Red Rock Possible @ 115,188,277,408,588,683,753,835,853,..... |
| Maxton | 1695 | 1764 Sandstone | | SW @ 1542, .. |
| Big Lime | 1876 | 1926 Limestone | | |
| Weir | 2160 | 2276 Sandstone | | |
| Top Devonian | 2375 | | | |
| -Gantz | 2375 | 2435 Silty Sand | | |
| -Fifty foot | 2470 | 2519 Silty Sand | | |
| -Thirty foot | 2567 | 2615 Silty Sand | | |
| -Gordon | 2615 | 2715 Silty Sand | | |
| -Forth Sand | 2715 | 2806 Silty Sand | | |
| -Bayard | 2887 | 2951 Silty Sand | | |
| -Warren | 3234 | 3264 Silty Sand | | |
| -Speechley | 3300 | 3589 Silty Sand | | |
| -Balliown A | 3805 | 4144 Silty Sand | | |
| -Riley | 4442 | 4470 Silty Sand | | |
| -Benson | 4874 | 4892 Silty Sand | | |
| -Alexander | 5124 | 5188 Silty Sand | | |
| Int. csg pt | 5238 | | | Have offsets within 2500ft radius producing from Alexander |
| -Sonyea | 6260 | 6414 Gray shale | | |
| -Middlesex | 6416 | 6454 Shale | | |
| -Genesee | 6454 | 6539 with black shale | | |
| -Genesee | 6539 | 6580 Black Shale | | |
| -Tully | 6580 | 6604 Limestone | | |
| -Hamilton | 6604 | 6622 calcareous shales | | |
| -Marcellus | 6622 | 6678 Black Shale | | |
| -Purcell | 6631 | 6642 Limestone | | |
| -Lateral Zone | 6648 | 6648 | | Start Lateral at 6648 ft, drill to 6648 ft |
| -Cherry Valley | 6658 | 6668 Limestone | | |
| Onondaga | 6678 | Limestone | | |
| Pilot Hole TD | 6778 | | | |

Base RR 850

| | |
|-----------------------------|----------|
| Target Thickness | 57 feet |
| Anticipated Target Pressure | 4474 PSI |

Comments: Note that this is a TVD prog for a horizontal well. All measurements taken from estimated KB elevation. Water and coal information estimated from surrounding well data. Intermediate casing point is recommended 50' beneath the Alexander to shut off any production from offset wells. Intermediate casing should be cemented into the surface string, per WV regulations. The estimated TD is the TVD landing point for the horizontal section of well, with the plan to then drill to a final TVD of 6648' at the toe of the lateral. The geologic structure is unknown at this time.

Will cross a fault in the early portion of the lateral

LATERAL DRILLING TOLERANCES

Mapview - Left of borehole: Deviate as little as possible left to avoid planned lateral 515273
Mapview - Right of borehole: Deviate as little as possible right to avoid lease line
Mapview - TD: DO NOT EXTEND beyond recommended wellbore to avoid lease line.

RECOMMENDED CASING POINTS

Fresh Water/Coal CSG OD 13 3/8 CSG DEPTH: 903 50' below red rock
Intermediate 1: CSG OD 9 5/8 CSG DEPTH: 5238
Production: CSG OD 5 1/2 CSG DEPTH: @ TD

| T. Vactor/J. Dereume | Author | Date Created | Plat Date |
|-------------------------|--------|--------------|-----------|
| Prog created: | JMD | 10/30/2013 | 9/19/2013 |
| Prog created: | SLH | 12/10/2013 | 12/3/2013 |
| Checked | JMD | 12/20/2013 | 12/3/2013 |
| Surface casing deepened | JMD | 1/16/2014 | |

03/14/2014

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

Fluids/Cuttings Disposal & Reclamation Plan

Operator Name WEU49 OP Code _____

Watershed (HUC10) Left Fork Arnold Creek Quadrangle West Union 7.5'

Elevation 1130.0 County Doddridge District West Union

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes x No _____

Will a pit be used? Yes: _____ No: X

If so please describe anticipated pit waste: _____

Will a synthetic liner be used in the pit? Yes _____ No X If so, what ml.? 60

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number 0014, 8462, 4037)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? Yes, The closed loop system will remove drill cuttings from the drilling fluid. The drill cuttings are then prepared for transportation to an off-site disposal facility.

*DCN
1-10-2014
MAC*

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air is used to drill the top-hole sections of the wellbore, Surface, Intermediate, and Pilot hole sections, water based mud is used to drill the curve and lateral.

If oil based, what type? Synthetic, petroleum, etc _____

Additives to be used in drilling medium? MILBAR, Viscosifer, Alkalinity Control, Lime, Chloride Salts, Rate Filtration Control, Deflocculant, Lubricant, Detergent, Defoaming, Walnut Shell, X-Cide, SOLTEX Terra. Of the listed chemicals the following are generally used when drilling on air: lubricant, detergent, defoaming. Water based fluids use the following chemicals: MILBAR, viscosifer, alkalinity control, lime, chloride salts, rate filtration control, deflocculant, lubricant, detergent, defoaming, walnut shell, x-cide, SOLTEX terra

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill

- If left in pit and plan to solidify what medium will be used? (Cement, Lime, sawdust) n/a
- Landfill or offsite name/permit number? See Attached List

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

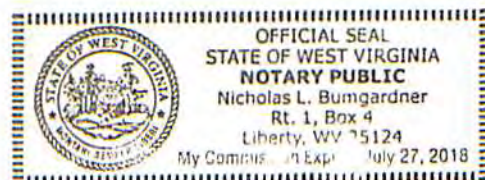
I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature *Victoria J. Roark*
Company Official (Typed Name) Victoria J. Roark
Company Official Title Permitting Supervisor

Subscribed and sworn before me this 30 day of DECEMBER, 20 13

[Signature] Notary Public

My commission expires 6/27/2018 03/14/2014



Proposed Revegetation Treatment: Acres Disturbed 37.4 Prevegetation pH 6.1

Lime 3 Tons/acre or to correct to pH 6.5

Fertilize type _____

Fertilizer Amount 1/3 lbs/acre (500 lbs minimum)

Mulch 2 Tons/acre

Seed Mixtures

| Temporary | | Permanent | |
|---------------|----------|---------------|----------|
| Seed Type | lbs/acre | Seed Type | lbs/acre |
| KY-31 | 40 | Orchard Grass | 15 |
| Alsike Clover | 5 | Alsike Clover | 5 |
| Annual Rye | 15 | | |

Attach:
Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Douglas Newlin Michael Goff

Comments: Preseed + Mulch install K+G to WU Dep regulations

Title: Oil & Gas Inspector Date: 1-10-2014

Field Reviewed? () Yes () No

RECEIVED
Office of Oil and Gas
JAN 14 2014
WV Department of
Environmental Protection
03/14/2014

EQT Production Water plan
Offsite disposals for Marcellus wells

017 06447

CWS TRUCKING INC.

P.O. Box 391
Williamstown, WV 26187
740-516-3586
Noble County/Noble Township
Permit # 3390

BROAD STREET ENERGY LLC

37 West Broad Street
Suite 1100
Columbus, Ohio 43215
740-516-5381
Washington County/Belpre Twp.
Permit # 8462

LAD LIQUID ASSETS DISPOSAL INC.

226 Rankin Road
Washington, PA 15301
724-350-2760
724-222-6080
724-229-7034 fax
Ohio County/Wheeling
Permit # USEPA WV 0014

TRIAD ENERGY

P.O. Box 430
Reno, OH 45773
740-516-6021 Well
740-374-2940 Reno Office Jennifer
Nobel County/Jackson Township
Permit # 4037

TRI COUNTY WASTE WATER MANAGEMENT, INC.

1487 Toms Run Road
Holbrook, PA 15341
724-627-7178 Plant
724-499-5647 Office
Greene County/Waynesburg
Permit # TC-1009

KING EXCAVATING CO.

Advanced Waste Services
101 River Park Drive
New Castle, Pa. 16101
Facility Permit# PAR000029132

Waste Management - Meadowfill Landfill

Rt. 2, Box 68 Dawson Drive
Bridgeport, WV 26330
304-326-6027
Permit #SWF-1032-98
Approval #100785WV

Waste Management - Northwestern Landfill

512 E. Dry Road
Parkersburg, WV 26104
304-428-0602
Permit #SWF-1025 WV-0109400
Approval #100833WV

RECEIVED
Office of Oil and Gas

JAN 06 2014

WV Department of
Environmental Protection

03/14/2014



4701706447

Where energy meets innovation.™

Site Specific Safety and Environmental Plan For

EQT WEU 49 Pad
West Union
Doddridge County, WV

For Wells: 514390 514391 514392 514393 514394 514395 515273

[Signature]
EQT Production
Permitting Supervisor
Title
12/30/13
Date

Date Prepared:

December 10, 2013

Douglas Newton Michael Goff
WV Oil and Gas Inspector
Title
1-10-2014
Date

RECEIVED
Office of Oil and Gas
JAN 14 2014
WV Department of
Environmental Protection

03/14/2014

| BOP Equipment | | | | | | |
|----------------------|-----------|--------------|---------|----------------|---------------------|-----------------------|
| Size (in) | Operation | Hole Section | Type | Pressure Class | Test Pressure (psi) | Testing Frequency |
| 13-5/8" | Drilling | Intermediate | Annular | 3M | 2100 | Initial |
| 13-5/8" | Drilling | Pilot | Annular | 3M | 2100 | Initial, Weekly, Trip |
| 13-5/8" | Drilling | Pilot | Annular | 5M | 4000 | Initial, Weekly, Trip |
| 13-5/8" | Drilling | Production | Annular | 5M | 3500 | Initial, Weekly, Trip |
| 13-5/8" | Drilling | Production | Blind | 5M | 4000 | Initial, Weekly, Trip |
| 13-5/8" | Drilling | Production | Pipe | 5M | 4000 | Initial, Weekly, Trip |

Wellhead Detail

| Size (in) | Type | M.A.W.P. (psi) |
|--------------------------|----------------------|----------------|
| 13-3/8" SOW x 13-5/8" 5M | Multi-ball Well Head | 5,000 |
| 13-5/8" 5M x 7-1/16 10M | Tubing Head | 10,000 |
| 2-1/16" 5M | Christmas Tree | 5,000 |

Well Control Trained Personnel

- Drilling
 - EQT On-Site Specialist – 2 on rotating hitches.
 - Contract Group's – Tool Pusher & Drillers
- Completions & Production
 - EQT On-Site Specialist

*DCW
1-10-2014
MAG*

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WV Department of
Environmental Protection
03/14/2014

EQT PRODUCTION COMPANY LEWIS MAXWELL LEASE WELL NO. WV 514394

017 06447



50
42

EXISTING GATE

APPROXIMATE END
END OF CO.RT. 50/42

NOTE:
SEE DESIGN FOR WEU 49 WELLS
FOR A MORE DETAILED EXHIBIT OF PROPOSED
CROSSING & LOCATION OF UTILITIES ETC.

EXISTING WELL
EXISTING GAS LINES

TO WEU 2
WELLS

EXISTING ROAD (PREVIOUSLY UTILIZED)
TO BE RESHAPED AND REGARDED

EXISTING GAS LINES

EXISTING WELL

TO WEU 1
WELLS

340' ± @
15-20% GRADE ±

600' ± @
5-10% GRADE ±

350' ± @
0-5% GRADE ±

PROPOSED
18" CMP

EXISTING GAS LINE

MATCH
LINE

SHEET 1 OF 2
SCALE: 1"=500'



ALL ROADS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED AND SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.E.P. OIL AND GAS BMP MANUAL ENTRANCES AT COUNTY/STATE ROADS SHALL BE MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATION. SEPARATE PERMITS MAY BE REQUIRED BY THE D.O.T.

SEDIMENT BASINS (TRAPS) AND APPROPRIATE EROSION CONTROL BARRIERS ARE TO BE CONSTRUCTED AT ALL CULVERT AND CROSS DRAIN INLETS AND OUTLETS AS REQUIRED IN THE WV D.E.P. OIL AND GAS BMP MANUAL. FIELD CONDITIONS (ROCK OUTCROPS AND BEDROCK) MAY PROHIBIT INLET TRAPS BEING INSTALLED. WHEN THESE CONDITIONS EXIST ADDITIONAL EROSION CONTROL MEASURES SHALL BE EVALUATED AND UTILIZED AS NEEDED.

EARTHWORK CONTRACTORS ARE RESPONSIBLE FOR NOTIFICATION TO THE OPERATOR AND INSPECTOR PRIOR TO ANY DEVIATION FROM THIS PLAN.

TEMPORARY SEED & MULCH ALL SLOPES AFTER CONSTRUCTION OF LOCATION.

CUT & STACK ALL MARKETABLE TIMBER
STACKED BRUSH MAY BE USED FOR STORMWATER CONTROL

APPLICATIONS FOR SEPARATE PLC PERMITS ON THE ACCESS ROAD STREAM CROSSINGS HAVE BEEN PREPARED (IF APPLIES).

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03/14/2014
Office of Oil and Gas
JAN 05 2014

- EXISTING CULVERT
- PROPOSED CULVERT 18" MIN. UNLESS OTHERWISE NOTED
- PROPOSED STREAM CROSSING
- APPROXIMATE LIMITS OF DISTURBANCE

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING

SURVEYORS
PROJECT MGMT.



ENGINEERS
ENVIRONMENTAL

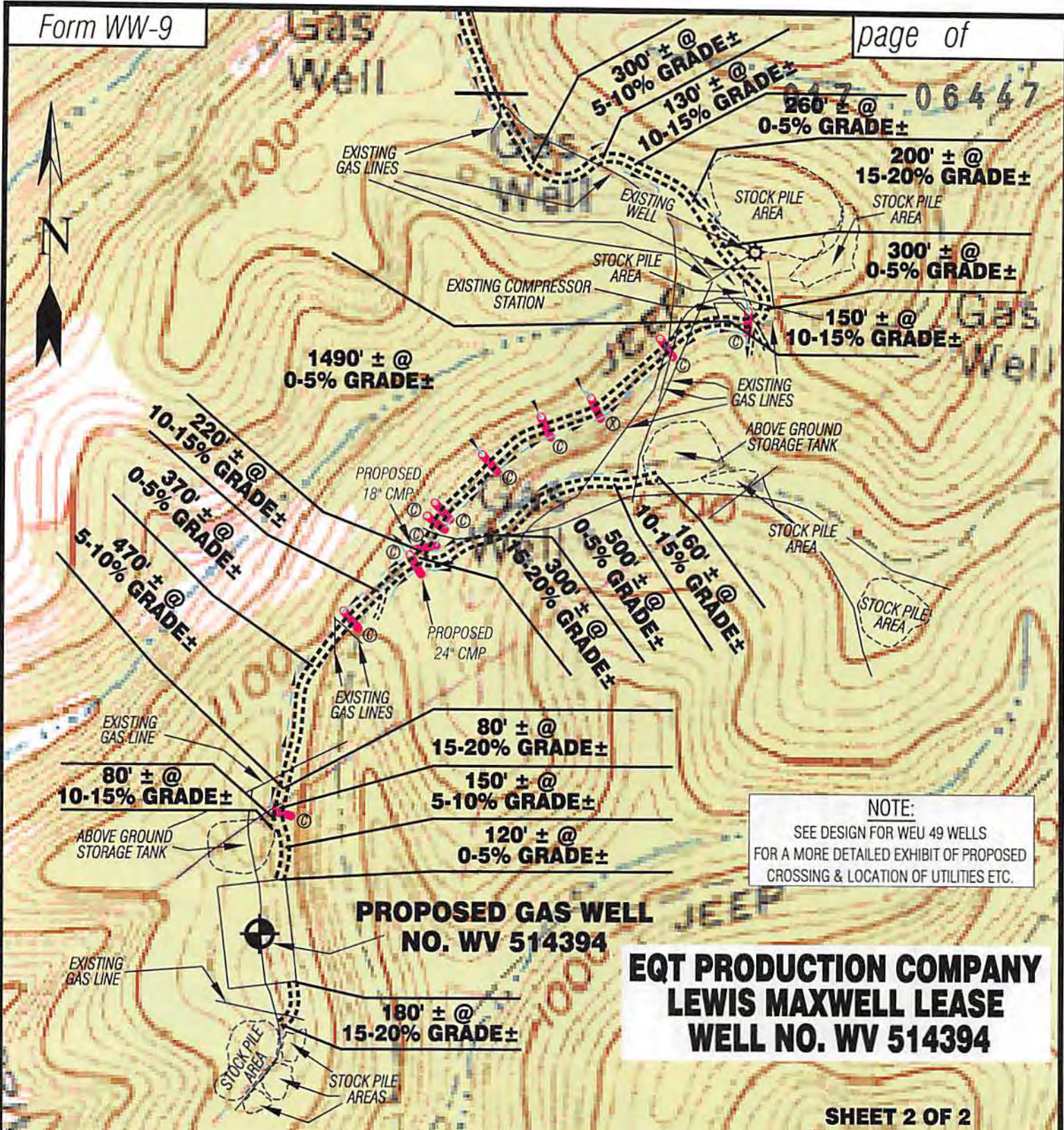
225 West Main St.
P.O. Box 150
Chenoweth, WV 26031
(304) 462-5634

56265 Dixie Bottom Road
Shawnee, OH 43047
(740) 671-9911

HONESTY. INTEGRITY. QUALITY

TOPO SECTION OF WEST UNION 7.5'
USGS TOPO QUADRANGLE

| | | | |
|--------------------|------------------|------------------|---------------------------------|
| DRAWN BY K.D.W. | FILE NO. 7871 | DATE 12/04/13 | CADD FILE: 7871RECS14394.dwg |
|--------------------|------------------|------------------|---------------------------------|



NOTE:
SEE DESIGN FOR WEU 49 WELLS FOR A MORE DETAILED EXHIBIT OF PROPOSED CROSSING & LOCATION OF UTILITIES ETC.

**EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
WELL NO. WV 514394**

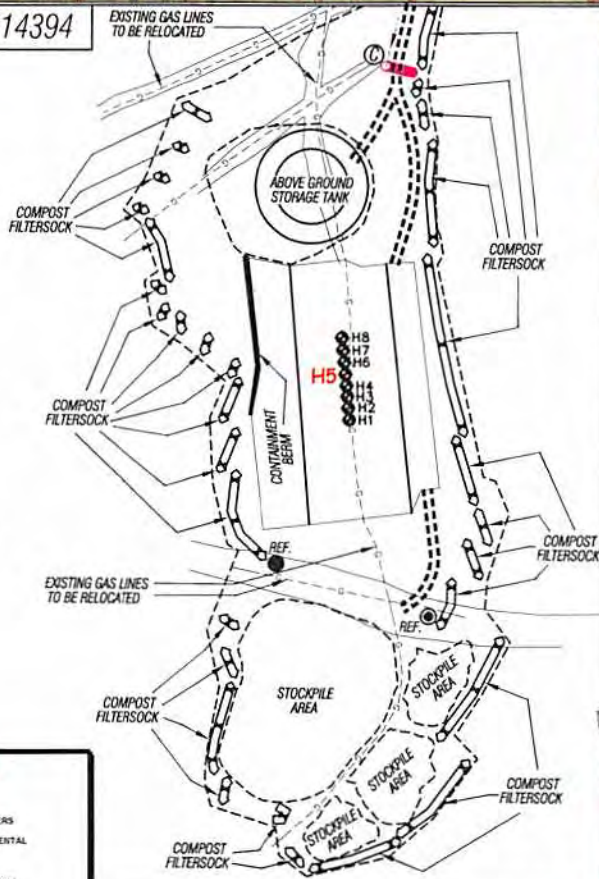
**SHEET 2 OF 2
SCALE: 1" = 500'**

Detail Sketch for Proposed Well WV 514394

- WEU49 WELLS
- H1-WV 514390
 - H2-WV 514391
 - H3-WV 514392
 - H4-WV 514393
 - H5-WV 514394**
 - H6-WV 514395
 - H7-WV 515273
 - H8- NOT YET DETERMINED

NOTE:
SEE DESIGN FOR WEU 49 WELLS FOR A MORE DETAILED EXHIBIT OF PROPOSED CROSSING & LOCATION OF UTILITIES ETC.

Not To Scale



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TEMPORARY SEED & MULCH ALL SLOPES AFTER CONSTRUCTION OF LOCATION.

CUT & STACK ALL MARKETABLE TIMBER

STACKED BRUSH MAY BE USED FOR SEDIMENT CONTROL.

APPLICATIONS FOR SEPARATE P.E.C. PERMITS ON THE ACCESS ROAD STREAM CROSSINGS HAVE BEEN PREPARED (IF APPLIES).

- EXISTING CULVERT
- PROPOSED CULVERT 15' MIN UNLESS OTHERWISE NOTED
- PROPOSED STREAM CROSSING
- APPROXIMATE LIMITS OF DISTURBANCE

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING

SURVEYORS PROJECT MGMT. **SLS** ENGINEERS ENVIRONMENTAL

228 First Main St. P.O. Box 150 Glenville, WV 26031 (304) 482-5634

5085 Diller Bottom Road Shady Side, OH 43047 (740) 671-9911

HONESTY. INTEGRITY. QUALITY

DRAWN BY: K.D.W. FILE NO.: 7871 DATE: 12/04/13 CADD FILE: 7871RECS14394.dwg

TOPO SECTION OF WEST UNION 7.5' USGS TOPO QUADRANGLE

WELL NO. WV 514394
STATE PLANE COORDINATES
(NORTH ZONE) NAD 27

N. 277,554.7
E. 1,635,663.7

LAT=(N) 39.254889
LONG=(W) 80.786630

UTM (NAD83)(METERS)

N. 4,345,093.5
E. 518,424.5

TOM DAVIES ET AL
1457.93 ACRES±

| | | | |
|---|--------------------------|-------------|----------|
| A | KEVIN & ROBERT ORNDORFF | 2 ACRES± | TM 20-20 |
| B | EDWARD & FERN WERNER | 2.02 ACRES± | TM 20-16 |
| C | TIMBERLAND TRUST | 7.02 ACRES± | TM 20-15 |
| D | HENRY FLUHARTY, ET AL | 2.02 ACRES± | TM 20-17 |
| E | WILLIAM & WANDA BLEEVINS | 3.01 ACRES± | TM 20-18 |

EQT PRODUCTION COMPANY LEWIS MAXWELL LEASE 2,654 ACRES± WELL NO. WV 514394

LANDING POINT
WELL NO. WV 514394
STATE PLANE COORDINATES
(NORTH ZONE) NAD 27

N. 276,081.0
E. 1,634,116.3

LAT=(N) 39.250782
LONG=(W) 80.792019

UTM (NAD83)(METERS)

N. 4,344,636.7
E. 517,960.6

BOTTOM HOLE
WELL NO. WV 514394
STATE PLANE COORDINATES
(NORTH ZONE) NAD 27

N. 267,253.6
E. 1,638,232.6

LAT=(N) 39.226709
LONG=(W) 80.777042

UTM (NAD83)(METERS)

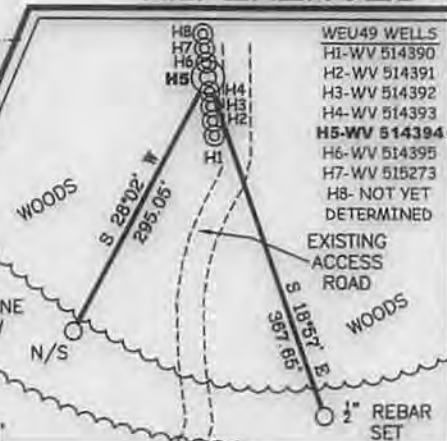
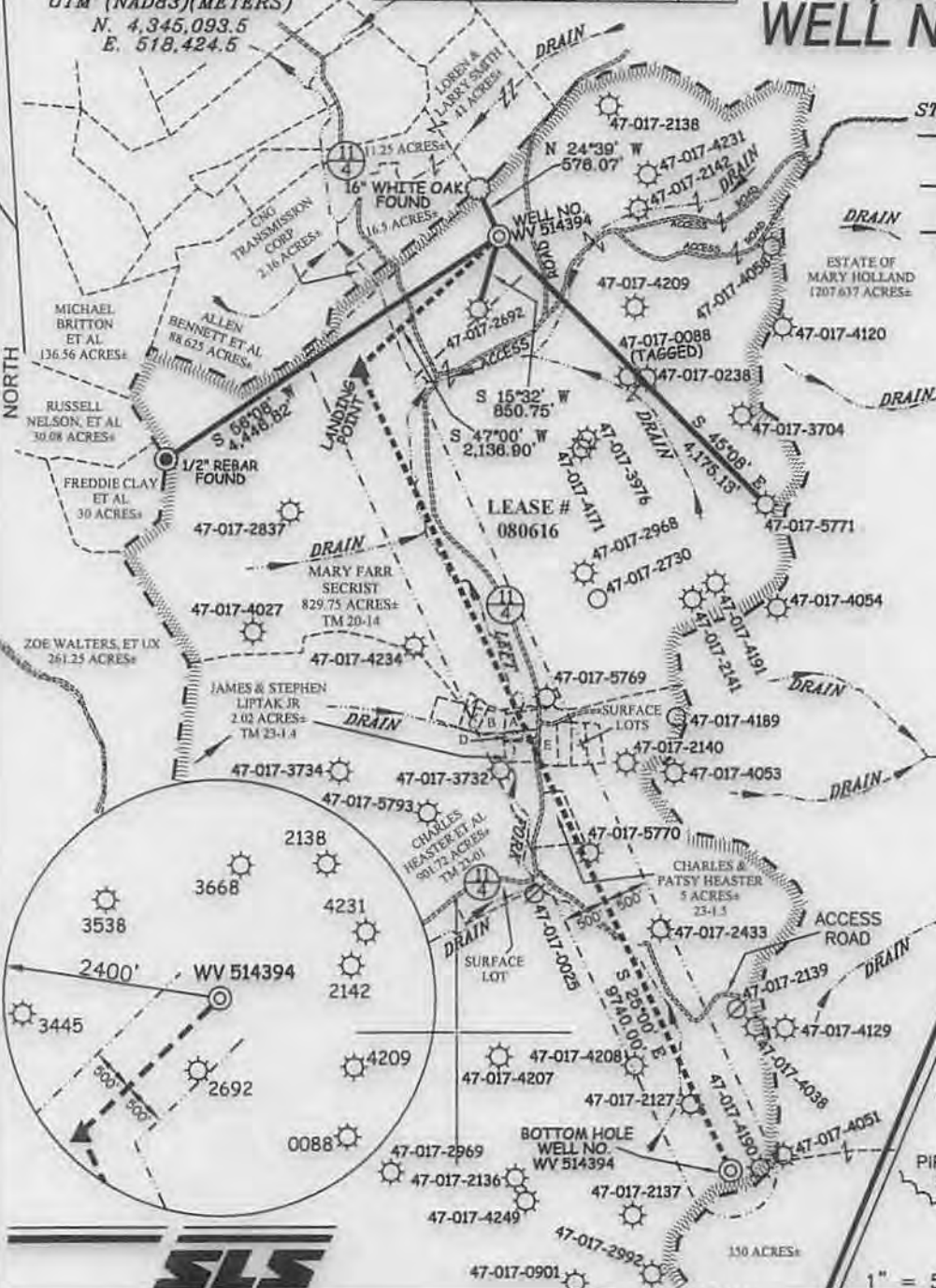
N. 4,341,968.4
E. 519,259.5

NOTES ON SURVEY

1. TIES TO WELLS, CORNERS AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD '27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM DB 28 PG 177.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF DODDRIDGE COUNTY IN JULY, 2013.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE TIE TO CORS NETWORK).
5. PLAT DATED 09/19/13 REVISED 12/02/13 TO CONCUR WITH DEP REGULATIONS.
6. NO WATER WELLS WERE FOUND WITHIN 250 FEET OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS (GREATER THAN 2500 SQUARE FEET) OR DWELLINGS WERE FOUND WITHIN 625 FEET OF CENTER OF PROPOSED WELL PAD.

REFERENCES

| WELL NO. | STATUS |
|--------------------|--------|
| WV 514390 | HI |
| WV 514391 | H2 |
| WV 514392 | H3 |
| WV 514393 | H4 |
| WV 514394 | H5 |
| WV 514395 | H6 |
| WV 515273 | H7 |
| NOT YET DETERMINED | H8 |



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. *Gregory A. Smith*
677



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE DECEMBER 03 20 13
 OPERATORS WELL NO. WV 514394
 API WELL NO. 47-17-06447 H6A
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7871P514394R3
 PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIE TO CORS NETWORK)
 SCALE 1" = 2000'

STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS

| | | | | | | | | |
|-----------------------------------|---|--------------|-------------------------|----------------|-----------------------------------|---------------------------|-------------------|------------------|
| WELL TYPE | OIL | GAS <u>X</u> | LIQUID INJECTION | WASTE DISPOSAL | IF "GAS" PRODUCTION <u>X</u> | STORAGE | DEEP | SHALLOW <u>X</u> |
| LOCATION | ELEVATION <u>1,160'(GROUND) 1,130'(PROPOSED)</u> WATERSHED <u>LEFT FORK OF ARNOLD CREEK</u> | | | | | | | |
| | DISTRICT <u>WEST UNION</u> | | COUNTY <u>DODDRIDGE</u> | | QUADRANGLE <u>WEST UNION 7.5'</u> | | | |
| SURFACE OWNER | <u>MARY FARR SECRIST</u> | | | | ACREAGE <u>829.75±</u> | | | |
| ROYALTY OWNER | <u>LEWIS MAXWELL HRS</u> | | | | ACREAGE <u>2654±</u> | | <u>03/14/2014</u> | |
| PROPOSED WORK | LEASE NO. <u>080616</u> | | | | | | | |
| DRILL | <u>X</u> | CONVERT | DRILL DEEPER | REDRILL | FRACTURE OR STIMULATE | <u>X</u> | PLUG OFF OLD | |
| FORMATION | PERFORATE NEW FORMATION | | | | PLUG AND ABANDON | CLEAN OUT AND REPLUG | OTHER | |
| PHYSICAL CHANGE IN WELL (SPECIFY) | | | | | TARGET FORMATION | <u>MARCELLUS</u> | | |
| | | | | | ESTIMATED DEPTH | <u>TVD 6648 TMD 18534</u> | | |

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY
 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

LONGITUDE 80°45'00" COUNTY NAME PERMIT